

THE STRUGGLE FOR EXISTENCE

129

with which light, sharp blows are struck.¹ The axes of the Swiss lake dwellings were made from boulders of any hard stone. By means of a saw of flint set in wood, with sand and water, a groove was cut on one side and then on the other. With a single blow from another stone the boulder was made to fall in two. By means of a hard stone the piece was rudely shaped and then finished by friction. A modern student has made such an ax in this way in five hours. Sometimes the stone was set in a handle of wood Or horn,² It will be noticed that this process was not possible until an auxiliary tool, the flint saw, had already been made. The tools and processes were all rude and great skill and dexterity were required in the operator. " Lafitau says the polishing of a stone ax requires generations to complete. Mr.

Joseph D. McGuire fabricates a grooved jade ax from an entirely rough spall in less than a hundred hours." ³

130. How arrowheads are made. As to arrowheads, "there are a dozen or more authentic reports by eye-witnesses of the manufacture of arrowheads in as many different ways."⁴ The

California Indians broke up a piece of flint or obsidian to the " proper-sized pieces. A piece was held in the left hand, which was protected by a piece of buckskin. Pressure was put upon the edge by a piece of a deer's antler, four to six inches long, held in the right hand. In this way little pieces were chipped off until the arrowhead was formed. Only the most expert do this successfully.⁵ Sometimes the stone to be operated on is heated in the fire, and slowly cooled, which causes it to split in flakes. A flake is then shaped with buck-horn pincers, tied

together at the point with a thong.⁶ In another report it is the stone with which the operation is performed which is said to be heated.⁷ In a pit several hundred flint implements were found stored away in regular layers with alternate layers of sand between. Perhaps the purpose was to render them more easy to work to the desired finish.⁸ Catlin describes another process of making

¹ *Gbdus*, LXXXVII, 238. ^{fi} Powers, *Calif. Indians*, 374.

² Ranke, *Der Mensch* II, 517. ^c /<\$*#., 104 ; *SmitJison*.

Rep. ^ 1886, Part I, 225.

^ Mason, *Origin of Invention* ^ 26. ⁷ *Smitkson. Rep.* ^ 1887, Part I, 601.

* *U. S. Nat. Mus.*, 1894, 658. ⁸ *Bur. Eth.*, XII, 561.